

Beyond Cap-in-Place: CCR On-Site Clean Closure using Macroencapsulation

Jeffrey T. Crate, PG

Waste Resource Services, LLC

John P. Swenson

EnCAP-IT

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ABSTRACT

Coal combustion residuals (CCR) have been used for many years in the construction of berms and engineered structural fill applications including embankments for highways, dikes and levees. However, large un-encapsulated structural fill projects have become a focus of environmental concerns due to potential leaching of metals and structural failures. Cap-In-Place of wet basins, where a cap is constructed but CCR remains in direct contact with underlying soils / groundwater without a liner system, either fails to meet utility or environmental standards of a true clean closure, or will inadequately address potential environmental releases.

To address these concerns, an economic and environmental beneficial use system has been developed based on macroencapsulation technologies within a Subtitle D-compliant liner and cover system. CCRs can be used in encapsulated mechanically stabilized earthen (eMSE) berms during a retro fit of existing on-site dry or wet basin footprints. The ultimate in "clean closure," (defined as full isolation of the CCR mass from the environment) EnCAP-IT's *safeBERM*[®] technology can be used to convert wet basins to dry lined storage facilities in a manner economically attractive as compared to other options often considered. The creation of a lined disposal footprint, constructed in phases, could include ALL material at the facility. This method utilizes CCRs in every facet of the coal ash management strategy, enabling facilities to establish an on-site beneficial reuse program that meets regulatory requirements, controls potential environmental liability, increases stability and safety, and minimizes the use / cost of other imported construction materials.

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